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The Babylonian Calendar in the Reigns of Lugalanda and Urkagina.—By GEORGE A. BARTON, Bryn Mawr College, Bryn Mawr, Pa.

WITHIN the past three years a large number of documents¹ from the temple archives of Telloh, dated in the reigns of Lugalanda and Urkagina have been published, and these documents show that the calendar of the period which they represent was in some respects different from the calendar of the time of Sargon, or of the dynasty of Ur, or of Hammurabi, or of the later periods.

For the most part, the names of the months in the time of Lugalanda and Urkagina were taken from agricultural processes and the agricultural festivals connected with them. There is but one exception to this; one month is named from a star. The names of these months had not yet crystallized into one conventional form. The names of several of them are expressed in a great variety of ways. Two or three of these names have survived into later times, as have fragments of several others of them. One who would reconstruct the calendar of this early time must be guided by the following clues. 1. He must adjust the month to the season described in its name. A harvest festival month must come at the time of harvest; a sheep-shearing festival at the time of sheep-shearing, &c. 2. He should

¹ These are the Russian publication of the collection of Nicolas Likhatscheff, St. Petersburg, 1908, (cited below as Ru), Allotte de la Fuye's *Documents présargoniques*, Fasciculus I, 1908, Fasciculus II, Paris, 1909, (cited below as DP), a few of the texts in T. G. Pinches, *Amherst Tablets*, London, 1898, (cited below as A), De Genouillac's *Tablettes sumériennes archaïques*, Paris, 1909, (cited below as TSA). These works contain more than five hundred documents from this period. To these should be added the seventy six tablets comprising series one and two in Thureau Dangin's *Recueil de tablettes chaldéennes*, Paris, 1903, (cited below as RTC). Professor A. T. Clay has kindly permitted me to examine his unpublished copies of the texts of this period which belong to the Library of J. Pierpont Morgan. (They are cited below as Mo.)

study the survival of the month names of this period and their fragments in the later times, and may often gain help in determining the place of a month in the earliest time by the place its name held in later month lists. The use of these lists requires caution, however. They represent not only other times, but other localities, and often the survival of other primitive names. Then several things may have affected them. If these month names originated before 3000 B.C., the precession of the equinoxes has carried the zodiac forward since that time, so that whereas then the vernal equinox occurred in the sign of Gemini, from about 3000 to about 750 it occurred in the sign of Taurus, and then in the sign of Aries. While in this earliest period astronomical considerations played almost no part, it is conceivable that at a later time the months may have been attached to the zodiac sufficiently to be slightly drawn out of position by the precession of the equinoxes. Again, special displacements occurred. King Dungi, of the dynasty of Ur, was deified and was assigned a festival. It can, I think, be shown that when that occurred the feast of the goddess Bau was pushed forward, and held a month later. Possibly in one or two instances the name of a month was through a new interpretation transferred to a different part of the year; but this should not be assumed without proof. The month lists which are of assistance in this study are published as follows: RTC, No. 180; EBH, p. 299; VR, 43; VR 29, 1—13a. This last list is repeated in ASKT, 64, 1ff., AL³, 92 ff., and AL⁴, 114 ff. To these should be added for the time of the dynasty of Ur the comprehensive grain account in CT.111 (No. 18343) and TCI No. 77, in which the months are all mentioned, in such various combinations that their position in the year can usually be determined.

3. The nature of the transactions in the reigns of Lugal-anda and Urkagina dated in these various months should be taken into account to see what light they throw upon the season of the year. 4. The nature of the transactions in dated documents of the dynasty of Ur, (these published in CT, I, III, V, VII, IX & X, in Reisner's *Tempel-Urkunden*,¹ in RTC, in A, in Barton's HLC,² in Lau's *Temple Records*,

¹ Cited as RU.

² *Haverford Library Collection of Cuneiform Tablets*. Philadelphia 1905—1909.

and Radau's *Early Babylonian History*, cited as EBH), should be studied for light as to the season at which certain things were done. The assumption seems just that similar agricultural work had to be done at the same time of year.

In the following discussion all these sources of information are drawn upon.

There are two reasons why this discussion is undertaken. 1. Genouillac in TSA, p. xviff. has made an arrangement of the calendar which starts, I believe, with a wrong premise, and is accordingly wrong in many of its conclusions.¹ 2. The Russian publication referred to above, which contains more than three hundred tablets and much rich material on the calendar, was apparently unknown to Genouillac, and the addition of this material warrants a new discussion.

Genouillac rightly begins his discussion with the month of the Feast of Bau. This month name continued in common use through the time of the dynasty of Ur, and Gudea twice states that the ZAG-MU, or New Year's festival occurred on the feast of Bau (stat. E. v. I—2, stat. G 111. 5). Genouillac assumes accordingly that the month of the Feast of Bau was identical with the month March 15th to April 15th. In this he is, I believe, mistaken. In VR 43, 36 a the month of the Feast of Bau² is said to be one of the names for the month DUL-AZAG. In VR, 29, 7a and ASKT, 64, 7a DUL-AZAG is said to be a name for Tashrit, the seventh month of the year. The occurrence of this name in this position in this list can, I think, be explained only as a survival of the position of the month in a list earlier than the dynasty of Ur. It follows accordingly that down to the time of Gudea the year at Telloh began at or near the autumnal equinox, as the Jewish year did in pre-exilic times, and as the religious year does among the Jews to the present day.³ This fundamental error has made much of Genouillac's outline of the calendar wrong. It is hardly conceivable that an important feast should have been transferred from the spring to the autumn in this way. In a country where the winter is mild and is a season of agricultural work which culminates

¹ Kugler, *Sternkunde und Sterndienst in Babel*. II. Buch. Münster in Westfalen, 1909, p. 176ff. accepts Genouillac's results.

² The phrase reads ITU [EZIN-]^d BA-U.

³ This had been recognized by Radau, EBH, 295.

in a spring harvest, and where the summer is a time of drought, it is more natural to begin the year in the autumn when vegetation is reviving after the summer heat. In Babylonia, too, this corresponds to the beginning of the date harvest¹—a harvest of great importance to the country—when the goddess of plenty begins anew to bestow her gifts. Such a time was most fitting both for a festival to the goddess and the beginning of a new year. The month of the Feast of Bau was, then, September-Oct. Eighteen documents from the reigns of Lugalanda and Urkagina are dated in this month. They are: Ru, Nos. 64, 167, 209, 217, 219, 235, 239, 253, and 261. DP, Nos. 51, 96, and 112, TSA, No. 20, A, No. 14, RTC, Nos. 27 and 39 and Mo. Nos. 1476 and 1494. These documents, however, throw little light on the month itself, as they consist almost altogether of pay rolls and lists of sacrifices—both of which might be written in any month of the year. The predominance of lists of sacrifices is, however, fitting to the new year season.

Later at the time of the dynasty of Ur the month of the Feast of Bau was pushed forward two months. It happened probably in part at the time king Dungi was deified. In honor of the king, perhaps, the feast of the New Year was given to his month, and made the Feast of Dungi, while the Feast of Bau was transferred to the next month. By that time other causes had already pushed the month of Bau forward one month. It still came, however, approximately at the season of dates. So it came about that a pay roll of dates (CT, VII, No. 17765) is dated in the month of the Feast of Bau.²

Thus all the indications that we have point to the autumn, not the spring, for the month of the Feast of Bau, and to a year in ancient Lagash which began in the autumn.

Our next step should be guided by RTC, No. 39 and Mo. 1476—two tablets which, though dated in the month

¹ See Doughty, *Arabia Deserta*, 1st ed. I. 557, 561, Zwemer, *Arabia the Cradle of Islam*, 125, and Barton, *Semitic Origins*, 111.

² It is no disproof of this that an account of quantities of dates sold for money (CT, V, 17765) should run from the month Amarasi (Jan.—Feb.) to Shukul (July—Aug.), but rather a confirmation of it, for these would be the months when dates were sufficiently scarce to be bought for money.

of the Feast of Bau, contain lists of provisions for the month of the DIM-eating feast of Nina. DIM was a kind of grain, the ripening of which was apparently celebrated by a feast. DIM-eating is expressed by the signs DIM-KÛ. Here we are confronted by a difficulty. DIM-KÛ is almost certainly the same as the combination found in the dynasty of Ur texts, usually read by scholars ZIB-KU. The four wedges of DIM, when carelessly written, as they were in the period of Ur, have not until recently been recognized as the equivalent of the earlier sign. On the tablet, RTC, 180 (of the Ur period) DIM-KU is the third month *before* the month of the Feast of Bau, and not the month after it. There were, however, in the Lugalanda period two months which bore the name of this grain—one was the month of the DIM-eating feast of Ningirsu, the other the DIM-eating feast of Nina. In countries like Egypt and Babylonia, in which agriculture is fostered partly by the overflow of the rivers and partly by irrigation, three different harvests may occur. In Egypt today there is the winter crop sown after the subsidence of the inundation, which is raised with almost no irrigation.¹ In Babylonia, where there are winter rains, such crops grew with no irrigation at all. In Epypt the summer crops are sown in April, and are harvested, according to the rapidity with which they ripen, from August to November. Babylonia, too, as will be shown below, had also its summer crops raised by irrigation.² DIM probably included the two grains, sesame, and the grain known today in Babylonia and Palestine as dhurah (𐎣𐎶). Sesame is harvested I am informed by Dr. John P. Peters and D. Z. Noorian (who was formerly a resident of Babylonia), in July and Aug., while dhurah is harvested late in the summer. If the sign designated two grains which ripened at different periods, or if two crops of the same thing were raised in the same summer, the feast of the first harvest would naturally be dedicated to Ningirsu, and the second, to Nina. At all events, the indications of the tablets are that there were two separate feasts, which celebrated the harvesting of this grain.

¹ See Baedeker's *Egypt.*, p. lvi.

² See Rawlinson's *Ancient Monarchies* I, 12, Jastrow's *Religion of Bab. & Assyr.*, p. 29, Roger's *History of Bab. & Assyr.* I, 273 ff., Barton, *Semitic Origins*, 156.

We conclude then from RTC, No. 39 and Mo. 1476 that the month of the DIM-eating Feast of Nina (EZEN-DIM-KU-^aNINA) followed the month of the feast of Bau (EZEN-^aBA-U), and corresponded to October-November.

The following tablets of the time of Lugalanda and Urkagina are dated in this month: Ru, Nos. 6, 230, 254, 272, 288, DP, Nos. 106, and 109. Their contents present quite a variety, Ru, 6 is a pay roll; Ru, 230, a list of skins of sheep; Ru, 254, quantities of wool, 269 and 272, quantities of fishes which formed an important part of the festival; Ru, 288, quantities of drinks and wood; DP, 106 and 109, both record quantities of dates and some other fruit. All the transactions are appropriate to an autumn month.

Ru, 269 states that fishermen brought quantities of fish for "the grain-eating, the DIM-eating festival of Nina (EZIN ŠE-KÙ EZIN DIM-KÙ-^aNINA). This shows that the DIM-eating festival of Nina was also called sometimes by the more general name of "grain-eating festival of Nina"—a fact which proves that the month name ITU EZIN-ŠE-KÙ-^aNINA, which is found in Ru, 57, 225 and 260 is a variant name for the "Month of the DIM-eating festival of Nina". These tablets are respectively a pay roll, a list of skins, and a list of supplies.

RTC, 30, a tablet of the time of Lugalanda, records the bringing of a quantity of fish for the DIM-eating feast of Nina of the month of the Feast-of-the-going-out-of-the-sea (EZEN-AB-UD-DU). If the DIM-eating feast of Nina was in this month, the name must have been another name for the month Oct.-Nov.¹ Genouillac makes it follow the month of the Feast of Bau, so making it April-May, but is unable to explain the appropriateness of the name. That it belongs in the part of the year in which we have placed it is shown by V, R, 43, 52—57a, where the name spelled AB-BA-UD-DU occurs as the name of the 10th month, Tebet (cf. V, R, 29, 10a), i. e. Dec.-Jan. It has there been pushed along one month further—a thing which probably happened when the month of the Feast of Bau was pushed forward.

¹ The Sumerian is ambiguous. It may be interpreted to mean that EZIN-AB-UD-DU is simply the date of the tablet in which case EZIN-AB-UD-DU would be another name for the month of the Feast of Bau.

This name—month of the Feast of the-going-out-of-the-sea—probably designated the month of low water. The overflow of the Tigris and Euphrates, which begins with the Tigris in March, has ceased on the Euphrates by the end of September. The rains do not begin until December, so that the month Oct.-Nov., after the overflow and before the rains, would be the month of lowest water. This again confirms our placing of the month. What is probably a variant of this name occurs in an unpublished tablet in the Harvard Semitic Museum, a copy of which has been loaned me by Dr. Mary I. Hussey. It reads: ITU GAR-KA-ID-KA, "Month of the food of the river",¹ and is most probably interpreted as a variant name of this feast.

As the next month—November-December—Genouillac places the month SIG-BA, the month of wool, on the ground that as the cool weather approached the people would be employed in making their winter garments. The one document dated in this month known to him (TSA, 27) is a receipt for flails and some wooden pegs from a carpenter. One would expect such objects to be sold nearer the threshing season, which is shown below to have coincided in Babylonia with the time of sheep shearing. There was a month named from the shearing of the sheep, as Genouillac noted and as we shall show below, and the "month of the wool" would be a fitting alternate name for that. It is shown below that these names were applied to the month March-April. Moreover in the time of the dynasty of Ur the wool was distributed to the weavers either in the month of the Feast of Tammuz (HLC, Pl. 51) or the Feast of Bau (HLC Pls. 23, 24), that the garments might be made before cold weather.

Nevertheless I suspect Genouillac is partly right in thinking that Nov.-Dec. had something to do with garments. A new month-name, which may be thus explained, has come to light in the Russian publication. In Ru 241, a list of skins for garments is dated, ITU ŠI-GAR-MA, which may be rendered, "the Month they 'put on' garments" (cf. Br. No. 11978 and No. 6778). As one sees men in the East today clothed in the cold rainy time in sheepskin coats, so this month-name appears to refer to time of putting these on.

¹ It seems reasonable to regard GAR-KA as a variant writing of B. 11997, *ukultu*, rather than to interpret by M. 9232, *egtrru*.

As to the name of the month Dec.-Jan. in this early time, I am in doubt. I am, however, tempted to believe that it may have been the month ITU UZ-NE-GU-RA-A-A (Ru, 226), the "Month they call the goats." After the rains begin, grass begins to grow, and it would be a natural time to lead the goats away to pasture again. Possibly a reference to some such process has survived in the month name ITU APIN-GAB-A (V, R, 43, 40—45a), which might be read the "Month the shepherds separate." If that name perpetuates the name of the one before us, and our supposition as to the time of year intended is correct, we must suppose that it was displaced at a later time and put back, for in V, R, 43 APIN-GAB-A stands for Oct.-Nov. The text Ru, 226, is a list of skins, and such lists are dated at all seasons of the year.

This month (Dec.-Jan.) corresponds to the month MU-ŠU-UL the period of the dynasty of Ur. The large transactions of that dynasty dated in that month are payments in wheat (CT, VII, 18395) and flour (CT, X, 12246)—transactions which do not help us in determining the correctness of our guess.

Next, we believe, should come the month called in Ru, 1, ITU AMAR-A-A-SIG-GA and in Ru, 222, ITU AMAR-A-A-SI-DA. AMAR was either young grain, or a variety of grain (cf. HLC, Pt. II, p. 23, i, 9 and p. 24, iii, 10). As AMAR stands for the young of animals also (cf. Reisner, U, No. 2, iii, 6 and *passim*), probably here it stands for young grain. The month-name probably means, the "Month of the filling-out-of-the-young-grain." According to DP, 60 and 69, there was a "Feast of Amaraasi."¹ DP. 60 is a list of sheep and quantities of oil furnished to the wife of Urkagina for that festival, and DP, 69 of food and garlands (in Semitic *Minnu*; cf. M. 3853 and BA, V, 638, 13) furnished to the same lady. There was, then, a kind of a festival of first fruits from which the month was named. We place the month in Jan.-Feb. because in CT, I, No. 77 it is placed just before ŠE-KIN-KUD, and throughout the dynasty of Ur held this position. Genouillac, who apparently gains his conceptions of the Babylonian agricultural seasons from the climate of southern France, makes this month May-June and calls it "the month when the crops begin to whiten." Many grain account tablets from the

¹ This would be a fresh of first fruits similar to the Hebrew feast of unleavened bread.

time of the dynasty of Ur, as will be pointed out below, show that the harvest was over, the grain threshed and ready for distribution by the month April-May, so that it must have been possible for them to have the feast of first fruits in February.¹ Of the two documents from our period dated in this month, one (Ru, 1) is a long pay roll (and pay rolls are dated in all months of the year), and the other (Ru, 222) is a list of skins received. Skins were likewise received in all months. In later times the month Amaraasi seems to have been the time for leasing asses, which were much used in the harvesting operations of the months which followed. Thus RU, 29 is an ass account from Amaraasi of one year to Šukul (July-Aug.) of the next. Flour accounts are dated in Amaraasi (CT, VII, 12932), payment of wages to IM-E-KID-A workmen (CT, X, 14313), payments of wheat (CT, VII, 12940 and 18409),

¹ It is possible that AMAR-A-A-SIG-GA was Feb.-March and that ŠE-KIN-KUD was one of the names for March-April. One would be forced to think this the case, if he reasoned from modern conditions only. Mr. D. Z. Noorian writes me: "In southern Babylonia barley is harvested in the latter part of March, immediately after barley, wheat is harvested, and so is rice rather early in April. Round about and south of Nippur all tender vegetation dies or dries up by the end of March except such as grows along the canals or swamps." Hilprecht, *Babylonian Expedition of the University of Pennsylvania*, Series D, Vol. I, p. 446, states that the workmen left Nuffar at the middle of April to harvest their barley and attend to agricultural affairs. This would imply that, if the climate remains unchanged, AMAR-A-A-SIG-GA and ŠE-KIN-KUD should come a month later than we have placed them. It is, of course, possible that by the period of Ur these months may have been pushed forward one place. It should be remembered, however that the names of both months remained unchanged during the Ur, period, that both were names the meaning of which was well understood, and that, if their season had not really corresponded to the actual time of the harvest at that period, it is highly probable that other names would have supplanted them. As noted above, too, there is abundant evidence in the Ur texts that at the time the grain was threshed and ready for storage by April-May, so that it is probable that in ancient times the harvest came slightly earlier than now. Possible confirmation of some climatic change in the Mesopotamian valley may be found in the fact that as late as 1470 B.C. elephants were still roving in upper Mesopotamia in the general region of Carchemish. Thothmes III. of Egypt hunted 120 of them there in the vicinity of Niy. (See Breasted *Ancient Records, Egypt*, Vol. II, § 588, and *History of Egypt*, p. 304.) This would seem to be evidence that in ancient times the climate was warmer than now.

and an account of the sale of dates for money, brought to a close (CT, V, 17752).

The next month was called ITU ŠE-KIN-KUD-DU, the "Month of cutting-the grain," a name which the month Feb.-March bore at the time of the dynasty of Ur (cf. TCI, No. 77). One document from our period is dated in it, RTC, 55. It is a list of quantities of AŠ-plant foods. From V, R, 43, 1—6 b it would appear that the month Amaraasi later was named from AŠ, perhaps because the AŠ-plant was cut in it. At all events in the times of Urkagina AŠ-plant products were to be had in the month ŠE-KIN-KUD.

Probably a variant name of this month at this early time was ITU-AMA-UDU-TUK, or "Month the sheep become mothers." A tablet of the reign of Lugalanda, (Ru, 184), bears this date. It is the record of articles brought by a shepherd for the wife of Lugalanda. The month of the yeaning time in the East is most naturally Feb.-March.

The next month, called in later times ŠE-IL-LA (cf. CT, III, 18343, iii, 31 and *passim*), was agriculturally a busy one in Babylonia, and was, if I rightly understand the agricultural references, designated by several names in the period of Lugalanda and Urkagina.

To begin with a name in which the name elements which have survived to later times appear, it is called in Ru, 234, ITU UDU-ŠU-ŠE-A-IL-^aNINA, the "Month when the goddess Nina carries grain to the sheep." In three documents, (Ru, 211, Mo. 1474, and TSA, 18), it is written, ITU UDU-ŠE-A-IL-LA, the "Month sheep-grain-carried," which is evidently an abbreviation for the longer form previously quoted. Other forms of the name are as follows: ITU UDU-ŠU-ŠE-A-GU, "Month to the sheep grain they feed," (DP, 47), ITU UDU-ŠU-ŠE-A-^aNINA, "Month to the sheep the grain of Nina," (Ru, 153, 176, 265), ITU UDU-ŠU-ŠE-A-^aNIN-GIR-SU, "Month to the sheep the grain of Ningirsu," (Ru, 196, 208, 274, TSA, 6, Mo. 1503); ITU UDU-ŠU-ŠE-A, "Month to the sheep the grain," (Mo. 1469); ITU ŠE-GAR-UDU, "Month, they feed the sheep," (Ru, 231); and ITU AN-TA-GAR-RA-A, "Month of feeding," (RTC. 20).

Genouillac puts this month in July-Aug. on the ground that forage was short and they then had to feed the sheep. I doubt the correctness of this for two reasons. 1. The part of

the name that has survived (ŠE-IL-LA) was, as every one knows, the name for March-April. 2. There is no one month in the summer when sheep had to be fed more than during some other months. In CT, III fourteen texts published on plates 11—15 record certain amounts of grain which were for certain sheep and cattle, but the texts are dated all the way from Gudranemumu (May-June, No. 13892), to the Feast of Dungi (Sept.-Oct., No. 13882). On the other hand it is probable that the sheep were used in threshing the grain (goats were used in the time of Hammurabi, see Code, xxxviii, 96—98), and that while the threshing was going on they were fed on straw, *tībn*, and perhaps some grain. This would concentrate a feeding on an especial time, and would agree with the survival of the name to later times. I therefore believe we should place this month at March-April where we find it later.

There was another phase of activity, to which the energies of a large portion of the community were directed. The time at which sheep are shorn in Babylonia today, Mr. D. Z. Noorian informs me, is the end of March. So the sheep which had been collected to assist in the threshing were in ancient times probably shorn of their wool before being sent back to pasture again. Accordingly, when we find a month named ITU MAL-UDU-UR, "Month of sheep-shearing" (RTC, 36), we are justified in supposing that it also refers to the month March-April. A shorter form of this name is found in Ru, 228, where it is called ITU MAL-UR, "Month of shearing." Sheep-shearing was an important function and was attended with feasting, as is shown in 1 Sam. 25 and 2 Sam. 13 : 23, and it is not strange that an agricultural population should have named a month from it.¹ A more popular name at Lagash seems to have been ITU SIG-BA, "Month of wool." This name occurs five times in the documents of our period (Ru, 9, 224, 229, Mo 1456, and TSA, 27). There can, it seems to me, be no doubt that it refers to the same month as the sheep-shearing. Still another variant of the name appears in Ru, 63, where it is written ITU SIG-⁴BA-U-E-TA-GAR-RA-A, "Month the goddess Bau bestows the wool."

That these four names which have to do with wool refer to the same month, seems to me most probable. At the time of the dynasty of Ur, wool for clothing was distributed

¹ See Additional Note on p. 271.

from EZIN-^dDUMU-ZI to EZIN-^dBA-U (July to Oct.), see HLC, Nos. 1 and 29. Between the sheep-shearing and these dates there was time for cleansing it.

The texts which we thus place together treat of the following topics all of which are appropriate to the time of year, viz.: DP, 47, is a list of provisions of all sorts presented by Barnamtarra, wife of Lugalanda, to various temples; TSA, 18 is a pay roll; TSA, 6, a list of perfumes; Ru, 208, a list of oxen for sacrifice; Ru, 153 and 176, sheep and goats for sacrifice; four tablets contain lists of sheep-skins; two, lists of fishes; two supplies of grain; and one (Ru, 211) is a receipt for a cow.

The next month was named from the storing and accounting for grain.¹ Four tablets (Ru, 16, Mo. 1505 and TSA, 14), bear the date ITU KARU-DUB-BA-A, or "Month of storehouse accounts." Ru, 249 expresses it ITU KARU-DUB-DA. On one text (DP, 119), the month is written ITU KARU-IMI-A-TA. IMI is here a variant of DUB in the sense of *Duppu*, "account" (cf. Br. 8360), so that the name still means "Month of storehouse accounts." On still another document (RTC, 56) it is expressed ITU ŠI-NAM-DUB-NI-BA-DUR-BA-A "Month when accounts are opened" (literally "established," cf. Br. 10528). This refers to the fact, which the great grain account tablet of the dynasty of Ur (CT, III, 18343) establishes, that grain accounts which ran for a year were opened in GAN-MAŠ (April-May, the month was called GAN-MAŠ from the time of Sargon, a name not yet found in the Lugalanda documents) and ran to ŠE-IL-LA. See CT, III, 18343, vii 34, 35, viii 46, 47, x 23, 24 and xvi 42, 43. CT, V, 18358 is also wheat account for five years which ran from GAN-MAŠ to ŠE-IL-LA. It was also a favorite time for the beginning of shorter accounts. All the following texts are wheat accounts beginning in GAN-MAŠ: CT, VII, 17761, CT, IX, 13134, 19050, 21348, CT, X, 14308. While wheat accounts exist which were opened in other months, (e. g. ŠE-IL-LA, CT, VII, 18427, GUD-RA-NE-MU-MU, HLC, 61, EZIN-^dNE-ŠU, CT, X, 14316, ŠU-KUL, CT, III, 19740,

¹ That the storage of grain is of very great antiquity at Lagash, is shown by the elaborate storehouse constructed by Ur-Nina, something like a century and a half before the time of our period. Cf. Heuzey, *Une ville royale chaldéenne*, p. 9ff., and L. W. King, *History of Sumer and Akkad*, p. 92ff.

IX, 13657, and CT, X, 14315, DIM-KÙ, CT, X, 21355, EZIN-^dDUMU-ZI, CT, VII, 18422, MU-ŠU-UL, CT, VII, 18395, AMAR-A-A-SI, CT, VII, 18409, ŠE-KIN-KUD, CT, VII, 13166, DIR-ŠE-KIN-KUD, CT, X, 12235), the documents from the dynasty of Ur show that GAN-MAŠ saw the opening of more accounts than any other month. This fact had, no doubt, a natural cause in the fact that the grain was then threshed and ready for market, and confirms us in the belief that the month April-May was the "Month of storehouse accounts," ITU KARU-DUB-BA-A.

I therefore regard it as the early name for that month, which by the time of Sargon was displaced by the name GAN-MAŠ, "Month of the division of the fields,"—a name which probably refers to the repair of the canals for the irrigation which began in the next month.

As the next month we are, I think, compelled by the documents of the period of the dynasty of Ur to place ITU GUD-RA-NE-MA-A¹, "Month the faithful oxen go out"—a month found in DP, 143 and RTC. 32². The documents of the period

¹ Genouillac (p. xix, n. 8) reads the name ITU-ĤAR-RA-NE-ŠAR-A on the basis of a remark of Thureau-Dangin in ZA, XVI, 345, n. 1—a remark based on the writing of the month name in RU, 222, a tablet of the period of Ur. This writing also occurs in the Ur tablet published in HLC, II, pl. 75 although it is not certain in either case that the first sign is to be read ĤAR instead of GUD. A copy of the month name quoted from an unpublished tablet by Thureau-Dangin, *Inventaire des tablettes de Telloh*, p. 9, where the name is spelled GUD-RA-NE-MU-MU, shows that in the Ur period the name was pronounced Gudranemumu. Thureau-Dangin himself has abandoned the reading ĤAR for the first syllable. ŠAR has the value MU when it means "to sing" (B. 4347) and "to shine" (B. 4346), but the value MA when it means "to go out" (B. 4302). That it had the value MA in our period the phonetic complement A shows. The MU of the Ur period arose, I believe, from phonetic deflection.

The value RA attaches to the sign DU when the latter means "go", "walk" (B. 4871) or "be firm", "faithful" (B. 4884). We might accordingly read "the walking oxen" instead of "the faithful oxen".

The value ĤAR for GUD is attested only in III R, 68, 64 a—a late syllabary. It may have arisen from the assimilation of *d* to the following *r* in this month name and from the softening of the initial palatal. It is quite uncertain whether GUD was pronounced ĤAR as early as the Ur period.

² In RTC, 32, the name is ITU GUD-RA-NE-MA-A-^dNINA-KA, "Month the faithful (or walking) oxen go out for Nina". It seems

of Ur show conclusively that the month followed GAN-MAŠ. For example HLC, 53 (Pt, II, pl. 72) reads ITU GUD-RA-NE-MU-MU ITU EZIN-^dNE ŠU-RA (Month Gudranemumu to month of the Feast of Neshu), which shows that Gudranemumu preceded Neshu. HLC, 81 (Pt, I, Pl. 33) reads ITU GAN-MAŠ-TA [ITU] EZEN-^dNE-ŠU-KU [ITU] III^{kam}, (from the month Ganmash to the month of the feast of Neshu, three months). Putting the two statements together it follows that for that period Gudranemumu followed Ganmash. HLC, No. 72 (Pt, II, Pl. 81) shows it in another way. We read ITU ŠE-IL-LA-TA ITU GUD-RA-NE-MU-MU-KU... III^{kam}. (from the month Šeilla to the month Gudranemumu... three Months) from which it follows that Gudranemumu was the third month. So far as I can see there is no good reason for supposing that the months were not in the same order in the period of Lugalanda.

The oxen went to the fields to work at the irrigating machines, as is shown for example in the Neo-Babylonian text published in BE, X, 44 and translated by Clay, *Light on the Old Testament from Babel*, 421. The month May-June occurred at the time when the combined flow of the Tigris and Euphrates rivers was at its height, and it strikes one as strange that oxen for irrigating purposes should have been so extensively employed then as to cause a month to be named from the fact. It is this which leads Genouillac to place this month in autumn, Sept.-Oct., when the rivers were subsiding. It seems, however, a violent proceeding to suppose that the month was transferred a third of a year between the two periods. It is quite possible that the name is equally appropriate where it stands.¹ It is quite probable that summer crops and orchards stood beyond the range of the overflow of the rivers and needed the aid of irrigation. It was customary, apparently, to begin such irrigation at this time. In a later list of months (V R, 43), a transformation of this name occurs as the name of the second month (April-May, see ll. 3—8 where the name ITU GUD-SI-DA occurs). Prob-

natural to infer from this that the oxen were laboring on the crop which was harvested for the DIM-eating festival of Nina. This would place the month where we have placed it above.

¹ It is not certain that they went to work at the irrigating machines. They may have gone to plough for the autumn crop.

ably this use of the ox in a month-name, however, had in this list an astronomical import and was connected with the second month to correspond with the Bull sign of the zodiac. It does not indicate that the ox-laboring month of the time of Lugalanda was the second instead of the third.

The one document dated in this month is a list of quantities of grain and fishes.

The next month was called by the same name that it bore at the time of the dynasty of Ur, ITU EZIN-^aNE-ŠU, "Month of the Feast of Neshu." Genouillac makes this the month Oct.-Nov., apparently because many tablets dated in the month designate quantities of seed for various fields. It is clear, however, from the evidence presented above, that the month was the fourth month or June-July in the time of the dynasty of Ur, and it seems gratuitous to suppose that earlier it came at a different time of year. The distribution of seed grains in tablets of the Ur period dated in this month may well have been for the crop which was to be gathered in October, or it may have been customary to have the distribution well out of the way before autumn. Two documents in the Lugalanda period are dated in this month, Ru, 29—a list of supplies—and RTC, 53—a pay roll.

The next month was, we believe, ITU EZIN-DIM-KÙ-^aNIN-GIR-SU, "Month of the DIM-eating Feast of Ningirsu," so called in Ru, 60, 218, DP, 117, TSA, 32, 48, and RTC, 34, but also called in A, 8, and Mo. 1457 and 1480, simply ITU EZIN-DIM-KÙ, "Month of the DIM-eating feast." Our reasons for distinguishing this feast from the DIM-eating feast of Nina have already been given. Our reason for placing it here is that A, 83 has a passage which reads ITU DIM-KÙ-ZI-TA ITU EZIN BA-U-KU ITU 4^{kam}. (from the month DIM-KU to the month Ezin-Bau, four months) which shows that at the time of the dynasty of Ur two months intervened between DIM-KÙ and EZIN-^aBA-U. Now the month list in TCI, 77 begins with ITU-^aDUMU-ZI, then comes ITU EZIN-^aDUN-GI, then, ITU EZIN-^aBA-U. Combining these two passages it follows that at the time of the dominance of Ur the feast of DIM-KÙ came next before the month of the feast of Tammuz. As we shall show below that the Babylonian year at the time of Urkagnia closed with

a month which was in reality the month of the feast of Tammuz, we place the month DIM-KÙ, or the DIM-eating festival of Ningursu, here in July-Aug. It seems fair to assume that, although the two months had been pushed forward a month by the time of Dungi, that they would retain the same order. From the analogy of the names of the month of the DIM-eating feast of Nina already treated, we are led to regard the name ITU EZIN-ŠE-KÙ-^aNIN-GIR-SU, "Month of the grain-eating feast of Ningirsu", as a variant name of this month. Ru, 197, 257, and RTC, 67, are dated in it.

The tablets which bear this date treat the following topics:—Ru, 60 is a list of provisions for asses and men, Ru, 218, a list of provisions, DP, 117, a summary pay roll, while TSA, 48 and RTC, 34 are records of quantities of fishes, A, 8 is a receipt for salt. TSA, 32, a list of oxen and cows, Ru, 197, and RTC, 67, lists of supplies, and Ru, 257, quantities of oil. The business which appears here is business which was carried on throughout the year. While not characteristic of any one month, it is not inappropriate to July-Aug. One text, Ru, 2, presents what is, I believe, a variant name for this month, and the only astronomical name which appears in these texts. The tablet—a list of provisions for temple servants—bears the date ITU MUL-BABBAR-SAG-E-TA-ŠUB-A-A, the "Month the star Babbar lays down its head," or "abandons its leadership." BABBAR means "bright," "white," and is the well known ideogram for the sun, but in the later Babylonian astronomy was a name for the planet Jupiter.¹ Babylonian astronomy as such was, however, the accumulation of many centuries of observation, developing, as Kugler² has shown, at a relatively late date. At the early time of which we are speaking BABBAR, "the white star," might have been equally well applied to any other star equally bright. The following considerations lead me to believe that in the month-name before us Sirius, not Jupiter, is intended.

1. Sirius, the brightest of the fixed stars, is about equally bright with Jupiter, and it comes about each year with a regularity with which Jupiter does not. BABBAR would be a very natural name for a primitive folk to apply to it, and in

¹ See Jensen, *Kosmologie*, 125 ff.

² *Sternkunde und Sterndienst in Babel*, Münster in Westfalen, 1907.

naming a month they would be far more likely to name it for a star which they had observed came regularly in that month than for a planet which wanders about from month to month.

2. At the time of the dynasty of Ur there is evidence that a month was sometimes named after Sirius. In RTC, 180, the name ITU LIG, "Month of the dog" occurs, and the tablets, HLC, Pt. II, No. 2 (Pl. 52) RTC, 283 and 286 are dated in it. In II R, 43, 63a we find a star name MUL LIG ⁴BABBAR, (or if read Semitic, *Kakkabu Kalbu* ⁴*Samaš*, i. e. the star "dog of the sun"). This star is recognized by Kugler and others as a name for Sirius.¹ Now in a text of the period of Ur (RTC, 276), this month is expressed thus: ITU LIG-BA-BAD, the "Month the dog dies" (cf. Br. 1517). This is, I take it, a reference to what astronomers call the "heliac rising" of the dog star. The sun approaches more and more closely to a star until finally it rises so nearly simultaneously with the sun that it cannot be seen. The last time it can be seen is called its "heliac rising." When the star disappeared in the rays of the rising sun it might naturally be described as the "month the dog dies," and an earlier age might as naturally describe it as the "month the bright star abandons its leadership." The two descriptions appear to refer to the same phenomenon. Kugler, (*op. cit.* p. 234), reckons that the heliac rising of Sirius about 700 B. C. was, for the latitude of Nineveh, July 25th. Of course for Lagash it would be slightly earlier. If these names, then, refer to Sirius they would refer to an event about coincident with the beginning of the month July-Aug.

3. Another reason for thinking that Sirius would first attract the attention of the Babylonians is that it attracted the attention of the early Egyptians, and gave them the foundation of their calendar. This calendar was adopted, Meyer² and Breasted³ hold, about 4240 B. C. If the brightest of the fixed stars could thus attract the attention of one early people, it could easily that of another.

If the months DIM-KÙ and LIG (or BABBAR-SAG-E-

¹ See Kugler, *op. cit.*, 230 and 273 also, Brown, *Primitive Constellations*, I, 277 ff.

² Cf. Meyer, *Geschichte des Altertums*, 2te Aufl. p. 101.

³ *Ancient Records*, I, 30, and *History of Egypt*, 14.

TA-ŠUB-A-A) were, as we have supposed, originally the same, they had ceased to be so by the time of the dynasty of Ur, for RTC, 180 has the names on two successive lines as two different months. It must be borne in mind, however, that by that time considerable displacement in month names had taken place. A month ŠU-KUL had been introduced before DIM-KÙ, Dungi had appropriated a month, and various slight changes had occurred.

The next month in the year was in the Ur period sacred to Tammuz and was called ITU EZIN-^aDUMU-ZI (cf. TCI, 77). Tammuz was closely associated with the goddess Ishtar, and in the list in V R, 43 this month is called ITU KIN-^aININNI, "Month of the mission of Ishtar"—referring, no doubt, to the myth of the descent of the goddess to the lower world. According to the myth she went to the lower world because Tammuz was dead, and the feast of Tammuz was accompanied with wailing for the death of the god. While the name Tammuz (DUMU-ZI) has not yet been found in a month name of the Lugalanda period, it is probable that the month is alluded to under three different names. One of these is ITU EZIN-^aLUGAL-ERIM, "Month of the feast of the god King-of-Erim." Two documents are thus dated: Ru, 202 and RTC, 59. I contended some years ago¹ that Lugal-Erim was a masculinized Ishtar. That he was either that or Tammuz himself is altogether probable, for NA-NA or Ishtar was the goddess of Erim. This month is not, then, to be placed in the winter as Genouillac does, but is to be recognized as the month of the Tammuz festival, Aug.-Sept.

What I regard as a variant name of the same month occurs in Ru, 313, where we read ITU GAL-ŠAG-GA, "Month of the man of favor" (possibly to be rendered "Month of the man of the palm tree"). The primitive Tammuz was associated with the palm tree,² and the closing lines of "Ishtar's Descent" (Rev. 47--49) show that the epithet "man of favor" would not be inappropriate to Tammuz. Probably, therefore, we have here a reference under another epithet to the same god, and through him to the same month. As the tablet records a

¹ *Semitic Origins*, pp. 183, 187.

² See *Semitic Origins*, 86 ff.

payment of money by a man of Elam, the subject matter does not help us in determining the time of year.

Still another variant I would connect, though with less confidence, with the same month. This occurs in Ru, 227 and reads ITU GAL-UNUG⁴-GA, "Month of the man of Eridu." The tablet is a list of skins presented by a NU-BANDA, officer of E-NAM-DUMU, or the "Temple of Sonship." Is it fanciful to see in DUMU here the same element as the DUMU in ⁴DUMU-ZI? If it is not, this tablet is connected with a temple of Tammuz.

The writer showed some years ago that the religion of at least one of the cities of which Lagash was composed was connected with Eridu,¹ and that there was a sacred palm tree at Eridu.² Combining these facts with the previous epithet, we gain some probability that we have here another reference to the month of Tammuz.

We have now completed the circuit of twelve months, but we have in the tablets of our period one intercalary month. It is the month in which DP, 99 is dated, and is expressed ITU GAL-LA-A, "Appointed month" (cf. Br. 2253). GAL is the ideogram by which the appointment of an intercalary month was expressed in the period of the kings of Ur, see CT, III, 18343, iii, 45, vii, 40, ix, 12, 49, and xvi, 45. There can be no doubt, therefore, of its meaning here. The tablet records a list of cows and oxen under a NU-BANDA officer.

While the above arrangement of the months is necessarily in part tentative, we have endeavored to utilize all available information, cuneiform, agricultural, geographical, religious and astronomical, in making it. It does not, as does that of Genouillac, presuppose the transfer of month names half way around the year before the time of the dynasty of Ur. Such changes of the position of month names by a month or two before that period as we have pre-supposed are made credible in part by the introduction of new month names, in part by the imperfection of the year, which had to be adjusted by intercalary months, and in part by the loss of the original significance of certain names as they became abbreviated.

We may tabulate our results as follows:

⁴ *Semitic Origins*, 196.

² *Ibid*, 197.

First month, Sept.-Oct.	ITU EZIN- ^a BA-U
Second month, Oct.-Nov.	{ ITU EZIN-DIM-KÛ- ^a NINA
	{ ITU EZIN-ŠE-KÛ- ^a NINA
	{ ITU EZIN-AB-UD-DU
	{ ITU GAR-KA-ID-KA
Third month, Nov.-Dec. (?)	ITU ŠI-GAR-MA
Fourth month, Dec.-Jan. (?)	ITU UZ-NE-GU-RA-A
Fifth month, Jan.-Feb.	{ ITU AMAR-A-A-SIG-GA
	{ ITU AMAR-A-A-SI-DA
Sixth month, Feb.-March,	{ ITU ŠE-KIN-KUD
	{ ITU AMA-UDU-TUK
Seventh month, March-April,	{ ITU UDU-ŠU-ŠE-A-IL- ^a NINA
	{ ITU UDU-ŠE-A-IL-LA
	{ ITU UDU-ŠU-ŠE-A-KÛ
	{ ITU UDU-ŠU-ŠE-A- ^a NINA
	{ ITU UDU-ŠU-ŠE-A- ^a NIN-
	{ GIR-SU
	{ ITU ŠE-GAR-UDU
	{ ITU AN-TA-GAR-RA-A
	{ ITU MAL-UDU-UR
	{ ITU MAL-UR
	{ ITU SIG-BA
	{ ITU SIG- ^a BA-U-E-TA-GAR-RA-A
Eighth month, April-May,	{ ITU KARU-DUB-BA-A
	{ ITU KARU-IMI-A-TA
	{ ITU ŠI-NAM-DUB-NI-BADUR-BA-A
Ninth month, May-June,	{ ITU GUD-RA-NE-MA-A
	{ ITU GUD-RA-NE-MA-A- ^a NINA
Tenth month, June-July,	ITU EZIN- ^a NE-ŠU
Eleventh month, July-Aug.,	{ ITU EZIN-DIM-KÛ- ^a NIN-
	{ GIR-SU
	{ ITU EZIN-ŠE-KÛ- ^a NIN-GIR-SU
	{ ITU EZIN-DIM-KÛ
	{ ITU MUL-BABBAR-SAG-E-TA-ŠUB-A-A

	{ ITU EZIN- ^a LUGAL-ERIM
Twelfth month, Aug.-Sept., (?)	{ ITU GAL-ŠAG-GA
	{ ITU GAL-UNUG ^{ki} -GA
Intercalary month,	ITU GÀL-LA-A ¹

¹ A study of the month names in this, the earliest list of Babylonian months known to us, impresses one as a strong argument against the astral theory, which the pan-Babylonians make the basis of their work. Of thirty six month-names, but one is astral. One is the name of the intercalary month; one has to do with the sea or the rivers; while all the rest have to do with agricultural occupations or agricultural festivals. The predominant influence of the heavens, which the pan-Babylonians postulate, is entirely lacking.

Additional Note.

In connection with the remarks about the importance of sheep-shearing in ancient Lagash made above on p. 261, it should be noted that Urkagina in Cone B (Sarzec, *Découvertes*, p. LI) bears witness to the importance of this operation. In col. ii, 4—6 he says MAL-URU-UR URU-AZAG-GA-KA-NI MU-NA-RU, "The sheep-shearing house of Uruazagga he built." This implies that sheep-shearing was a kind of public event, and would account for the naming of a month from it.